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Issues related to the social and economic impacts of the mining sector, especially in developing countries and economies in transition

Basic problem of improving the capacity of developing countries and economies in transition to capture the maximum economic and social benefits of their potential for mineral production

Report of the Secretary-General

Summary

The present report, which has been prepared in response to Economic and Social Council decision 1996/306, considers effective mechanisms for improving the capacity of developing countries and countries with economies in transition to maximize the economic and social benefits of mineral production.

In those countries making the transition from central planning to the free market and in most of the developing world, minerals production is currently undergoing a transformation. Over the past decade, many developing countries and countries with economies in transition have liberalized their investment regimes for mining and have privatized formerly state-owned mineral assets. The restructuring of fiscal and regulatory regimes to encourage foreign investment and the associated influx of mining capital, technology and skills are transforming traditional relationships between mining firms, local communities and the Government in many developing countries. That transformation has necessitated a re-evaluation of the most effective policy approaches to capture increased economic and social benefits of mineral production.

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The present report considers effective mechanisms for improving the capacity of developing and transition countries to maximize the economic and social benefits of mineral production. Mineral economies – defined as those generating at least 10 per cent of gross domestic product from mining and at least 40 per cent of their foreign exchange earnings from mineral exports – account for over one quarter of all developing countries and countries with economies in transition. In many additional countries, mineral production also occupies a central role in public policies to promote local, regional and national economic development.

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I. Assessing the feasibility of increasing economic and social benefits in mineral economies

1. Future economic and social development in the mineral economies of developing countries and countries with economies in transition will be closely linked to the ability to develop innovative mechanisms to capture, retain, and use the fullest range of benefits from mineral production. Mechanisms for the effective capture and allocation of mineral revenue streams will remain central to the development objectives of developing and transition economies. There is a need, however, to be creative in the design and implementation of those mechanisms to facilitate investment, create new economic opportunities from mineral development, and derive lasting benefits that extend beyond the revenue stream alone. Thus, in addition to revenue generation, new mineral-related investments provide an opportunity for harnessing the technological, managerial and institutional capabilities of inwardly investing firms to build local capacity.

2. Developing and transition economies face many similar challenges in improving their capacity to maximize the economic and social benefits of mineral production, such as the needs to diversify linkages between mineral production and local economies, to develop mechanisms for a more equitable allocation of mineral revenue between national, regional and local governments, to increase public participation in decisions over mineral resource development, and to work within the constraints of limited public resources for social investment. There are, however, several significant differences between countries with economies in transition and developing countries that will affect the feasibility of implementing specific policy approaches to build capacity. These differences include the infrastructure, staffing and technical knowledge of state agencies, different priorities for social investment projects, the relative size of income inequalities within the general population, popular attitudes and receptivity to foreign investment, and the rate, extent and success of liberalization policies.

A. Mineral resources and development

3. The natural resource sector – particularly minerals production – has traditionally been identified by public policy as an "engine of growth" for the development of local, regional and national economies. That popular view rests on a model of the natural resource base – the export base model[1] – which asserts that economies with rich resource endowments can create economic stability and growth by meeting an external demand for their primary products through export. By providing raw material exports to the wider economy, actively developing increased economies and scale, and promoting strong regional linkages, investment in the natural resources sector will initiate a process of cumulative causation leading to economic growth, stability and diversification. That resource-based strategy of industrialization will then create a "spread effect" as a result of developing appropriate linkages between the natural resource sector and the local economy. The range of potential linkages includes:

(a) Backward linkages to those supplying capital inputs for the sector;

(b) Forward linkages to those buying output from the sector;

(c) Final demand linkages to firms supplying consumption goods to workers in the natural resource sector;

(d) Fiscal linkages through taxation, royalties and resource rents.[2]

4. For many natural resource economies, however, the process of economic diversification and sustainable growth based on natural resource exports has been elusive. In many instances, the development of the natural resource base may fail to provide the conditions necessary for anticipated economic stability, diversification or increased social opportunity.[3] Thus, many mineral economies can be characterized by:

(a) Cyclical expansions and contraction of activity (boom and bust cycles);

(b) Limited employment opportunities outside of the minerals sector;[4]

(c) Dependent or "enclave" patterns of development;[5]

(d) Highly skewed income distribution;

(e) Inadequate financial planning for asset replacement;

(f) Low revenue retention;

(g) Under-investment in institutional and social capacity.

5. Contrary to the expectations raised by the export-base model, therefore, a consistent underperformance of mineral economies relative to non-mineral economies has been observed. The extent of that underperformance has been

significant enough to lead some commentators to suggest that resource endowment is more of a curse than a blessing (Gelb, 1988; Nankani, 1979; Auty, 1993). Effective policy approaches to maximize economic and social benefits from minerals production will need, therefore, to consider carefully the causes of such underperformance and develop mechanisms that are able to both capture benefits and minimize the costs of dependence on natural resources.

B. Challenges and opportunities of mineral economies

6. The principal obstacle to sustained economic growth and stability in economies based on the extraction of non-renewable resources is not depletion of the natural asset but the volatility of the revenue stream derived from mineral resource development.[6] The characteristic volatility of mineral sector revenues can create a series of negative spillover effects for local, regional and national economies based on mineral development,[7] such as the uncertainty of projecting future mineral revenues, a decline in the competitiveness of non-mining tradeable goods (known as "Dutch disease"[8]), and a cyclical process of windfalls and shortfalls in government revenues that require prudent management if they are not to amplify the tendency to boom and bust (Auty, 1993).

7. The management of the way in which resource revenues captured by the Government are deployed can be particularly significant for the development of sustained economic growth and the maximization of social benefits. Resource revenues are often deposited directly into the State's general fund so that resource revenues become just one of several revenue streams for allocation by the State to various economic and social activities. That can be problematic since unlike many other revenue streams, revenues from non-renewable resources are non-recurring, and often encourage dependence, cause inflation and distort the economy (Poole et al., 1992). The economic distortions caused by the influx of mineral revenues require the State to allocate scarce resources to remedy the damage to the non-mining sector. That process of crisis management reduces the economic efficiency of the mineral sector and precludes investment in capacity-building. Analysis has shown the economic distortions from mineral revenues to be the key impediment to sustainable development in hard mineral economies (Auty, 1993).

8. The tendency towards economic distortion is exacerbated by the fact that modern mining operations – such as those currently being developed as part of the restructuring of the minerals industry in developing and transition economies – tend to have high capital-to-labour ratios, modest local production linkages and large overseas capital flows. As a result, the strongest linkage between the mining sector and the local and national economy often tends to be fiscal, as opposed to the backward, forward or final demand linkages identified for other economic sectors (see para. 3 above). Since it is those fiscal linkages that are paramount, a central public policy objective is the design of institutions (such as stabilization funds) and mechanisms (taxation policy, regulations concerning trust fund management) that buffer the short-term distortions of mineral price volatility and maximize the long-term gains from mineral revenues (Lewis, 1982; Auty, 1993).

9. The development of mechanisms to contain the economic distortions caused by mineral revenues needs to be a primary objective of efforts to increase the capacity of developing and transition economies to maximize the developmental benefits of mineral production. In addition to the socio-economic challenges outlined above, mechanisms for managing the sociocultural impacts of mining, creating positive opportunities for training, skill acquisition and social investment, and broadening and diversifying public participation in decision-making at major mineral projects are likely to become increasingly significant as mining activity expands into frontier areas in developing and transition economies.

II. Improving capacity to capture increased economic benefits from mineral production

10. In response to the fiscal crisis of the State, and propelled by the conditions attached to international development loans and the requirements of structural adjustment programmes, many countries have passed legislation over the last 10 to 15 years to encourage foreign investment in the minerals sector.[9] Declining mineral prices in the early 1980s and stagnant demand made it increasingly difficult for government-owned mining companies to finance the management and technical changes necessary to reduce costs and remain competitive. The attraction of international mining capital and the promotion of domestic market-led enterprises through the creation of a legal regime that provides certainty to investors has been identified by many countries as a means of overcoming those financial constraints. Although many areas of the developing world were not formerly closed *de jure* to foreign investment, the political and economic risks associated with investment in

these areas were often judged sufficiently high to deter prudent investment. Concern over political unrest, the possibility of expropriation or sudden changes in taxation policies or the laws on the repatriation of profits, for example, precluded large-scale foreign investment (Warhurst and Bridge, 1997).

11. Over the last 10 to 15 years, many countries have begun to pass legislation designed to improve the investment climate, in particular to encourage foreign interest in mineral resources. Since 1989, for example, over 75 countries have liberalized their investment regimes for mining (MERN, 1996a). The specific manner in which that process of liberalization has been undertaken varies considerably from country to country, but virtually all cases demonstrate a measured retreat from former policies of government intervention in minerals production. For example, the composition of investments entering the mining industry in Bolivia has shifted strongly from the public sector to the private sector since 1985. That trend reflects the combined effects of reduced state resources available for investment in mining activities and a sustained policy of promoting private sources of investment in productive industry in lieu of state sources. That policy is most clearly reflected in the decision of the Government of Bolivia to exit the mining and metals sector through the capitalization of the Vinto smelter and the transfer of operating control over the mining assets of the Corporación Minera de Bolivia to the private sector.[10]

A. Policy objectives

12. The liberalization and privatization of the natural resource sector in developing countries and economies in transition reflects a fundamental reappraisal of the State's role in the development of natural resources, and is often associated with a shift from an import substitution model of development to one based on the promotion of exports.[11] Rather than being the owner, operator and regulator of mineral production, the State's direct role has been reduced and transformed to that of a facilitator of private mineral production. Although in most cases mineral resources remain state property, the development of those resources into productive assets is increasingly undertaken by the private sector. The State aims to ensure social benefits from mineral extraction not through controlling the means of production but through the mechanisms of regulation and taxation. A central objective of policy intervention to build capacity in mineral economies is to encourage new mineral investment and establish institutional mechanisms to capture benefits and minimize the costs of dependence on natural resources. Those institutions convert the revenue from non-renewable resource extraction into a renewable resource – capital – that can be allocated to achieve growth and development objectives.

B. Fiscal linkages

13. Tax revenues are one of the principal mechanisms by which countries capture economic benefits from mineral production. Governments have a variety of taxation policies at their disposal, ranging from the normal channels of corporate and income taxation through to royalties on specific minerals. Foreign direct investment in the mineral sector is sensitive to the extent and flexibility of the taxation regime in developing and transition economies. Accordingly, structuring a taxation regime that is sufficiently flexible to attract foreign investment yet robust enough to ensure increased resource revenues to the State remains a major challenge for developing economies.

14. The package of neo-liberal reforms adopted in developing and transition economies represents policy approaches to increase tax revenue from mining and mineral processing, both from mineral taxation directly and from a higher level of economic activity as a result of mineral development. The objective has been to set tax rates at a level that encourages investment so that mineral revenues to the Government rise as a result of increased investment and mining activity.[12] New mining legislation enacted in Greenland, for example, avoids royalties entirely and reduces government intervention for revenue collection in the minerals sector to corporate taxation alone (Poole et al., 1992). Although it reduces potential returns to the State in the short term, that policy may increase the attraction of foreign capital to investing in Greenland's natural resources in the longer term by decreasing the investment risk. Peru has similarly restructured its tax code with the objective of increasing revenues from mineral production by accelerating foreign investment in the mineral sector.

15. Like Peru, the restructuring of regulatory frameworks in other developing and transition economies is indicative of the competition between liberalizing countries for foreign mining capital, as each country seeks to create a competitive fiscal regime, attractive investment policies, and transparent and expeditious permit processing (Andrews, 1992). Although it is generally welcomed by the minerals industry, senior mining analysts have begun to question whether competitive bidding between countries for a fixed amount of investible funds has driven tax rates below the levels required for the long-run sustainability of mining in

individual countries. It is worth noting that Papua New Guinea's Minister for Mining and Petroleum recently announced new policy initiatives that *increased* royalty payments to landowners in an effort to restore harmonious relationships between landowners and mineral producers and create the social and political conditions conducive to long-term investment (Mining Journal, 1996a and 1997).

C. Fiscal incentives to facilitate development of local capacity and corporate best practice

16. It is clear that many developing countries are structuring their tax code to encourage foreign investment in the mineral sector. It is less clear, however, whether the full potential of tax incentives in encouraging corporate strategies to achieve best-practice performance has been realized. For example, enabling firms to make their expenditures on the innovation and application of cleaner production technologies tax deductible could accelerate the adoption of cleaner processes as part of foreign direct investment. Similarly, allowing firms to make tax deductions for funds set aside for closure and site reclamation could facilitate proactive clean-up at mine sites, while tax benefits could be provided for investment in secondary (i.e., downstream) processing of mineral concentrates. For example, since 1990 Greenland has allowed taxable income to be reduced by 10 per cent annually of investment in secondary processing (Poole et al., 1992). There is also considerable scope for innovative tax policy that would allow companies to make social expenditures in the vicinity of the mine in lieu of taxes (Cooney, 1995).

D. Management of mineral revenues

17. The large size, non-recurring and highly volatile nature of revenues from mineral production highlights the need for prudent policies and robust mechanisms to invest and allocate windfall rents in projects sufficient to replace depleted ore assets. The experience of several countries has shown that the allocation of windfall rents is often subject to domestic political pressure and could be much more prudently managed. There is a tendency to use windfalls to boost consumption (by reducing taxation) rather than investing in production or social welfare. The increased revenue experienced by Bolivia from the oil price rises in 1973-1974 and 1979, for example, were used to lower taxes and had the effect of increasing foreign debt to the point at which foreign loans were halted in 1980 (Auty, 1993).

18. Venezuela and Saudi Arabia have used resource revenues to develop economic infrastructure in an attempt to diversify the national economy and reduce dependence on natural resources. Although their short-term goals – such as employment generation in infrastructure development – have been successfully met, the long-term success of such state-sponsored policies of diversification must be judged against the continued significance of natural resources exports to the economies of those countries. In contrast to Bolivia's consumption boom and the infrastructure investments of Venezuela and Saudi Arabia, Chile has adopted policy approaches to dealing with windfalls that illustrate a process of learning from the experience of other mineral economies. At the urging of the International Monetary Fund, Chile established a mineral stabilization fund in 1985 to secure mineral benefits while protecting the rest of the economy from either rapid injection or withdrawal of mineral revenues, and successfully used that fund to retire debt (Auty, 1993; Poole et al., 1992).

E. Mineral stabilization funds

19. Mineral stabilization funds segregate mineral revenues from other sources of government revenue and serve as an internal buffer to reduce the impact of revenue fluctuations in that volatile sector on public spending and exchange rates. The fund accumulates reserves in years when market prices exceed an anticipated reference price. In the case of Chile, the price differential between reference and market prices is split into three stages, requiring a progressively greater percentage of the differential be paid into the fund. Its success is linked to a sound mineral taxation policy, structured so as to be able to extract windfall revenues without deterring long-term investment in the mineral sector. The copper fund accounted for one quarter of Chile's official reserves of $2 billion in 1988, and by 1989 the fund had increased to $1.7 billion (Auty, 1993).

20. Permanent trust funds represent an approach to harnessing the high-volume short-term revenues from non-renewable resource extraction to lower debts and taxes, improving social services and creating short-term business opportunities outside of the mineral sector. Permanent trusts with principal derived from natural resource revenues have been adopted by federal and state governments in developing and developed economies, and typically receive between 1 and 30 per cent of revenues derived from non-renewable resource development. The state of Alberta in Canada, for example, has a development fund that invests resource revenues as loans to other provinces, as equity in

development projects, or in projects to build local capacity, such as irrigation, recreation and health-care facilities or scholarship funds (Pretes and Robinson, 1989). Permanent trust funds are distinct from state-managed accounts, and typically incorporate the following features (Poole et al., 1992):

(a) The fund principal is protected from expenditure by the Government;

(b) The capital source is distinct, i.e., does not derive from general fund transfers;

(c) The principal is held in trust for beneficiaries, with the State acting as trustee;

(d) The fund is designated with a special purpose or serves some function other than general state expenditures;

(e) Income derived from fund investments may also have a special purpose.

21. Capital in the trust fund increases through deposits and investment income, so that the original capital is preserved and earnings can be used to finance the state's budget or development initiatives. Thus, the trust fund converts the non-recurring income from non-renewable resource extraction into a renewable resource, and fund earnings can replace the income stream from the natural resource once the resource is depleted (Poole et al., 1992).

22. Papua New Guinea, which has witnessed increased investment and production in copper and gold projects over the last decade,[13] has accumulated experience in the successful application of mineral stabilization funds. The country first used stabilization funds to mitigate the impact of revenue fluctuations on the economy from the world-class Panguna copper mine at Bougainville. In the early 1970s, revenues from the Bougainville copper mine were placed in the fund, and since copper prices and revenues fell during the mid 1970s the fund played a significant role in public spending. The country also used the fund to successfully offset the economic disruption when Bougainville suddenly closed in 1989 following its takeover by secessionist forces. Bougainville had provided one third of Papua New Guinea's gross national product, and the fund was used to cover for the sudden loss in revenue and provided a means for the Government to avoid sharp revenue fluctuations while negotiating external loans. Deployment of income and principal from the fund was able to cover the period from the cessation of production at Bougainville in 1989 to 1992, when expansion at other mines (Ok Tedi and Misima) would provide revenue flow (Auty, 1993).

23. In summary, permanent trust funds can serve several functions in increasing the capacity of countries to maximize economic benefits from minerals development (Poole et al., 1992), by:

(a) Saving resource revenues that would otherwise be consumed;

(b) Extending the benefits of resource revenues over several generations or in perpetuity;

(c) Providing an additional source of budgetary income;

(d) Being used to intervene in the economy to achieve state objectives, such as diversification or stabilization;

(e) Providing an additional or alternative source of investment capital;

(f) Externalizing windfall effects and preventing distortions from arising in the economy.

F. Institutional measures for isolating mineral revenue

24. In addition to the creation of trust funds that isolate mineral revenues from other forms of state revenue and expenditure, there are several other institutional measures designed to separate mineral wealth from the political process that have proved successful in dampening the destabilizing effect of revenue booms. Chile, for example, increased the autonomy of the Central Bank in an effort to reduce political control over money supply and foreign debt. Other countries have sought to provide constitutional protection to mineral revenues. Poole and others (1992), for example, illustrate the significance of constitutional protection to the success of Alaska's Permanent Fund, which was established in 1976, receives 25 per cent of most non-renewable resource revenues, and is valued at over $12 billion. Although the legislature has discretion over investment income, Alaska requires a state referendum to amend the state's constitution before Permanent Fund monies can be spent. That isolation of mineral revenues from the political process is regarded as highly significant in preventing fund misappropriation by government or interest groups.

G. Leases and performance bonding

25. Since the successful development of mineral deposits typically requires large amounts of capital, skill and expertise, the development of mineral resources –

particularly where the mineral estate is owned by the Government – is often conducted through leasing. The lease is a legal instrument that conveys the right to develop a deposit to another party, and binds the lessee and lessor into sharing the benefits from the development. If used effectively, the lease can be a significant mechanism for creatively harnessing the economic and social benefits of mineral production and for building technical and managerial capacity.

26. The lease provides a series of rights to the lessor that can be used to capture economic and social benefits from the mineral resource. Under most leases, the costs of exploration, development and production are borne by the lessee, while the benefits reserved for the lessor are negotiated between the parties. Analysis of the operation of mineral leases for oil and gas in the United States of America has illustrated that there are three central elements within the lease that facilitate the lessor in capturing a diverse range of economic and social benefits:[14]

(a) The right to bonus – the sum paid to the owner of the mineral deposit by the developer in order to acquire the lease. Proven deposits will command a higher bonus than unproven deposits;

(b) The right to delay rentals – the sum paid to the owner of the mineral deposit by the developer if the developer decides to delay the commencement of operations. Where no production is obtained, delay rentals can be the most valuable right to the owner of the mineral deposit;

(c) The right to royalty – a fractional part of the minerals paid to the owner of the mineral deposit as share of the profits from the mineral development. It can be considered the owner's share in the profits of a joint enterprise in which the owner puts up the land and the recipient of the lease puts up the capital and skill.

27. The leasing process therefore provides an opportunity for the mineral owner to establish appropriate mechanisms for capturing the economic and social benefits from specific mineral projects. The lease agreement between the resource developer and the Northwest Alaska Native Association (NANA) at the Red Dog zinc mine in Alaska, for example, provided NANA a bonus of $1.5 million on signing, $1.0 million delay rentals every year until production began, and an annual royalty of 4.5 per cent of net smelter return, rising to 50 per cent over 25 years once the developer has recovered capital costs. In countries with experience of mineral leasing, such as the United States, Canada and Australia, there is a tendency for leases to be "front-loaded" with terms and conditions since the opportunity for intervention is more limited in the post-lease stages.[15] Since there is no way of knowing at the time of the lease issuance whether the lease will proceed through all stages of production and to closure, there is also a need to retain a review stage in which lease terms and conditions can be adjusted and renegotiated during project development.

28. Performance guarantees can be established to provide incentives for continued investment in local infrastructure and programmes to build social capacity over the life of the mine. Such performance guarantees are financially supported through the use of performance bonds, which can be structured either as a mine-specific bond or as a fund that can be used for wider social issues, many of which may only be indirectly related to mining. Several countries currently use bonding as a principal tool to ensure surface reclamation and restoration, and that mechanism could be adapted to cover social as well as environmental impacts. Like environmental bonds, social performance bonds can – if appropriately structured and administered – strengthen the capacity of existing institutions to facilitate foreign and domestic firms in achieving and maintaining environmental and social best practice at mining operations, from exploration through development and production to closure.

III. Improving capacity to capture increased social benefits from mineral production

29. The restructuring of investment regimes for mining is indicative of a shift in thinking about the most effective way for Governments of developing countries and transition economies to promote the strengthening of social, technical and managerial capacities. That shift can be characterized as a transition from state-centred strategies of intervention towards the facilitation of private enterprise and market mechanisms to deliver capital, technology and skills, and to build social, technical and institutional capacity. There is now widespread recognition that foreign direct investment deserves particular attention as a potential channel for the development of technical and managerial capacity, the diffusion of best-practice approaches, and the leveraging of social investment. Not only has foreign direct investment in prominent sectors, such as mining, increased dramatically in the last 10 years,[16] but competition between countries for inward investment has led to a decline in the relative capacity of Governments to mandate contractual terms and conditions for the provision of social benefits from minerals production. Thus, innovative approaches towards improving the capacity of developing and transition economies to maximize the social benefits of mineral production involve

the creation of new partnerships between industry, local people, government, and multilateral development agencies.

A. Increasing social opportunity through diversification

30. Diversification has been promoted by many local and regional governments as a means of reducing the exposure of mineral economies to cyclical downturns in mineral prices. The objective is to increase the capacity of the mineral economy to ride out price fluctuations by dispersing economic activity across several different sectors and avoiding concentration in a single, highly volatile sector. Policies of economic diversification can either be vertical (promoting downstream parts of the core business to capture value-added activities, such as processing and fabrication) or lateral (promoting activities that are more autonomous from those of the core sector). Although widely adopted, policies of economic diversification have often met with only limited success.

31. An innovative and successful partnership to maximize social benefits can been seen in the development by Cominco of the Red Dog Mine on territory owned by the Northwest Alaska Native Association (NANA) in Alaska, United States. The world class Red Dog zinc deposit, which began producing high-grade zinc, lead and silver in 1989, is considered a model of progressive northern development, and provides an insight into how the development of large mineral projects in transition and developing economies might be harnessed to build local capacity. The NANA/Cominco development agreement sought to extend conventional efforts at economic diversification through a comprehensive programme to develop local capacity and provide a sustainable economic base for the region. Specifically, the agreement gives Cominco the right to build and operate the mine and market the metals. In return, NANA receives an escalating percentage of royalties that will eventually reach 50 per cent of mineral profits. The agreement also provides local people with employment flexibility, allowing indigenous people to pursue a traditional lifestyle while providing modern training and employment. A subsistence advisory committee establishes strict protections to ensure that development does not interfere with subsistence activities such as hunting and fishing, while a shareholder hire programme establishes hiring preferences for indigenous NANA shareholders to work at operations. A joint NANA/Cominco management committee has been established to review and approve operations activities, an employment committee has been set up to assist in hiring, training and promoting NANA shareholders, and NANA and its subsidiaries provide drilling, catering and other contracted services to the project.

B. Alternatives to diversification

32. The development of capacity through economic diversification may not be an appropriate or feasible policy approach for maximizing social or economic benefits at all mineral operations. Some mineral economies, for example, have sought to manage the social and economic costs of mineral development by encouraging innovative, alternate approaches to the development of the extensive economic and social infrastructure often associated with mineral development. One approach is to reduce traditional backward and forward linkages to the local economy to a minimum by not promoting economic growth and its attendant service and administrative infrastructure at the site of production. Rather, resource rents are captured through fiscal means and are allocated for economic and social development projects in the wider regional economy. That may be particularly appropriate for frontier areas with low population densities, where a workforce can be more cost-effectively recruited from distant locations on a fly-in basis rather than being sustained on-site. Such a strategy was originally pioneered for resource development in locations where the costs of habitation are restrictive (for example, offshore oil) but has since been applied with success to mining operations, such as those in Western Australia (Houghton, 1993).

C. Participatory approaches to social investment

33. There is considerable scope for the development of participatory approaches between government, local community, industry and other interested parties to maximize economic and social benefits from mineral projects and achieve broader development objectives. The integration of mining projects in developing and transition economies into broader regional development programmes, supported by developmental aid agencies, multilateral financial agencies and/or non-governmental organizations, increases the opportunities for building local capacity during the development and operation of a mineral project. A number of mining companies active in developing and transition economies have already demonstrated their support for partnerships, noting that in addition to their developmental benefits, partnerships provide added security

of investment in the short-term and can facilitate the emergence of favourable conditions for investment over the longer term (Cooney, 1995).

34. For example, Placer Dome has actively implemented a partnership model of social investment at its Las Cristinas Project in Venezuela.[17] Company strategy has sought to strengthen existing efforts within indigenous communities to promote the expansion and diversification of the non-traditional cash economy with the objective of increasing autonomy and providing the resources to secure traditional activities and social institutions. Indigenous communities have, for example, secured carpentry and forest products supply contracts with the mining company. The company has also countenanced small-scale artisanal mining activity on parts of the Las Cristinas property, and initiated a social investment programme during the final phase of exploration, which provided assistance to expand a local school, improve a local clinic and install a new water storage tank. That initial programme is to be supplemented with increased capacity-building activities that aim to strengthen community capabilities and institutions. Specifically, over the life of the mine, the programme aims to (Cooney, 1996):

(a) Improve the level and distribution of income within local communities;

(b) Facilitate the creation of a sustainable, diversified economy;

(c) Encourage local initiatives and the development of stable communities;

(d) Increase the level of education and training within communities;

(e) Improve the quality of life and access to essential public goods and services;

(f) Minimize environmental impacts;

(g) Increase the participation of women in development.

35. A key component to that partnership model of social investment is the establishment of dialogue and consultation between different stakeholder groups affected by mineral development. Increased public participation in decision-making at all stages of minerals development, from initial exploration through development and operation to closure and the establishment of post-mining land use, represents a significant contribution to the development of a country's capacity to maximize the benefits – and minimize the costs – of mineral production (MERN, 1996b).

36. In the case of Las Cristinas, for example, the company entered into an agreement with the Canadian International Development Agency in 1996 to complete a viability study for a local economic diversification initiatives (social economic improvement) programme. The objective of that agreement was to create a strategic framework for promoting long-term social, economic and environmental sustainability of local communities through the activities of local non-governmental organizations and international non-governmental organizations and with the support of the company. Projects for consideration during the development of the strategic framework included investment in eco-tourism, upgrading of aviculture facilities, technical assistance for small-scale mining, sewing workshops, cement block fabrication, and the development of local organization and leadership capacity, education and training, and micro-enterprise financing.

D. Indigenous rights and revenue-sharing

37. The allocation of rights to revenues, employment and other benefits from mineral investment can be a key consideration in promoting the development of local capacity (see, for example, the case study of recent initiatives in South Africa contained in the present report). Mineral rights in many countries are typically held by the national Government, with rights to extract the mineral transferred from the Government to a private company through a lease or concession agreement.[18] A principal consideration for policy approaches to develop local capacity is the design of revenue-sharing agreements between national, local and regional governments to facilitate the return of a significant proportion of the mineral revenue stream to subnational (local and regional/provincial) governments and communities. The Philippines, for example, has a national wealth revenue sharing programme, in which 40 per cent of revenues are returned to the mining region by the central Government. Peru has a similar programme, in which one fifth of the income taxes from mining activities are distributed to regional governments (20 per cent) and local governments (80 per cent).

38. The often limited institutional capacity of developing countries has raised concerns that the traditional model of mineral revenue distribution, in which the central Government receives revenues from mines via taxes and then distributes benefits to the population in the vicinity of the mine, does not work effectively in many developing and transition economies. There is potential, therefore, for increasing capacity through the development of an innovative tax policy that either channels taxes more effectively to local communities or allows companies to

make social expenditures in lieu of taxes. Such policies could be not only more effective in delivering social programmes tailored to the needs of the communities directly impacted by mining development but also more economically efficient. Policies that provide tax relief for companies making social expenditures could provide a creative response to the particular challenges of mineral developments in frontier areas, where foreign companies may play the role of surrogate government, providing goods and services to communities for which the Government has the responsibility but not the capacity to deliver (Cooney, 1996).

Case study. Public policy approaches to capturing economic and social benefits of minerals development in South Africa

Background

South Africa is one of the world's largest minerals-producing nations. In 1996, South Africa accounted for 40 per cent of the world's gold and 56 per cent of the world's platinum supplies. The direct contribution of the minerals industry to gross domestic product (GDP) was 8.1 per cent in 1996, with the significance of the minerals industry increasing to 15 per cent of GDP once indirect contributions are included. South Africa's mining industry has been compromised by increased costs associated with work disruption, workplace inflexibility, technical problems related to deep-level gold mining, declining ore grades and declining productivity. Despite those constraints, primary mineral exports accounted for 38 per cent of South African merchandise exports in 1996 (South Africa Chamber of Mines, 1997).

Policy changes and implications

Minerals policy within South Africa is currently undergoing wholesale restructuring. Although many measures implemented during the apartheid era remain in place, much proactive policy is being implemented by major mining companies. Among significant issues faced by the new Government is a policy to promote resource access for those previously facing discrimination. Equally significant for future policy is the need to ensure enabling macroeconomic and legislative environments in which mining can be profitably carried out. To maintain a strong domestic industry during the current phase of globalization in the minerals sector, South Africa aims to ensure that fiscal, legislative and operating environments remain internationally competitive (South African Chamber of Mines, 1996). Significant policy issues are described below:

Ownership of resource rights not held by the State have in the past been dictated by a combination of Roman-Dutch law and racial circumstances. Recent changes in ownership policy have sought to reduce that racial bias of ownership. The new Government of South Africa has explored the complete abolishment of private ownership of mineral rights, but that idea has met with resistance from the mining sector, and exchange of minerals ownership has to date met with little direct success.

The South African Chamber of Mines notes the need to lower *barriers to entry* in the minerals sector and facilitate effective use of the 1991 Minerals Act, which enables government intervention in the case of activities deemed to be against the national interest.

South Africa treats *foreign investment* in the minerals sector in a similar manner to domestic enterprise, and permits 100 per cent ownership. Import surcharges on capital goods have been eliminated. Currently, foreign direct investment in mining only accounts for less

than 2 per cent of GDP, reflecting the reduced profitability associated with gold mining, significant tariff reductions in other sectors and the termination of protective policies.

Government tax receipts from mining during 1996 were in excess of 1.8 billion rand. A move away from revenue to profit-related taxation, together with possible concessions relating to South African minerals demarcation, should provide a mechanism for encouraging new investment in minerals. The Government has pledged not to increase tax in real terms since it aims to remain internationally competitive (South African Chamber of Mines, 1996).

Profit sharing through increased wages was agreed in June 1997. The package was conditional on the implementation of full calendar operations. To date, that system has not been fully implemented but it is expected to significantly increase minerals productivity.

Mining companies are now investing more in the *education* of adult workers. Not only are educated miners more productive, but such education will also further enhance national education levels and empowerment.

The Mine Health and Safety Act of 1996 imposes the responsibility for *health and safety* at mines on owners and managers.

E. Strengthening civic institutions

39. Civic institutions – those that promote education, training, community organization and the dissemination and public availability of information – play a central role in improving a country's capacity to maximize the benefits from mineral production. By providing an interface between government, communities and industry, those institutions represent a significant forum for dialogue and stakeholder participation in decisions relating to mineral development. Support for those institutions can facilitate decentralized, bottom-up initiatives to harnessing the developmental benefits of mining activity. Such initiatives, if developed through local participation and supported by national Governments, can represent an alternative to the extensive use of national, regulatory approaches to capturing economic and social benefits.

40. By involving stakeholders more effectively in participation from the outset, civic institutions not only further the development of local capacity but can also promote collaboration and cooperation as alternatives to political confrontation between industry, government and communities. The recent increase in mineral investment in developing economies provides an opportunity to develop creative partnerships at the local level to integrate mine development into a wider regional strategy for improving economic and social conditions. The creation of partnerships to promote increased capture of the benefits of mineral production can be facilitated through the development of common tools and methodologies for measuring progress towards sustainable development in mineral economies. By collectively developing and implementing indicators for economic, social and environmental performance, for example, Governments, industry, non-governmental organizations and development agencies can create a common framework for measuring and evaluating the benefits of mineral extraction.

41. Education and training are essential components in the development of a country's capacity to increase economic and social benefits from mineral extraction and processing. As an investment in human capital, education and training can foster the development of the skills and capacities necessary to participate in the minerals sector. In addition, training and education can improve the resiliency of local communities to fluctuations in mineral activity by emphasizing the development of skills that are transferable beyond the mineral sector. For example, the Jackpile-Paguate Mine, located on the Laguna Pueblo Native American Reservation in New Mexico, initiated a programme of cross-training to develop skills and expertise to be used locally once the mine closed. Mine workers were provided with training in construction, earthmoving and business activities, so that once production ceased Laguna Pueblo had developed sufficient local capacity to go into business as a regional contractor. Laguna Construction is now one of the largest Native American enterprises of its kind, specializing in land reclamation, hazardous waste management and construction (MERN, 1996c).

IV. Recommendations for developing capacity

42. Innovative policy approaches are required if the capacity of developing and transition economies to maximize economic and social benefits from minerals development is to be improved. Analysis of the challenges and opportunities arising from the particular characteristics of mineral economies demonstrates the importance of developing mechanisms and institutions able to minimize the potential for economic and social disruption while maximizing potential returns from new investment. The feasibility of adopting specific mechanisms to encourage the development of capacity will vary from country to country and even from one mineral project to another. Mechanism design and implementation, therefore, needs to be attentive to structural differences between developing and transition economies, as well as to differences between countries within each group. Variation in mineralogical, economic, social and political conditions suggests that blanket prescriptions for capacity-building in developing and transition economies are unlikely to be effective. It is possible, however, to identify the generic elements for successful policy approaches to increasing the capacity of mineral economies to maximize the benefits of mineral production. Those elements are:

(a) To facilitate opportunities for investment, employment and capacity-building by reducing levels of political risk to new investment through the development of appropriate mining laws, a competitive tax system, and transparent, enforceable regulatory codes;

(b) To increase the feasibility and opportunities for success of efforts to build capacity by developing innovative approaches to manage the volatility of revenue streams in mineral economies;

(c) To promote education and training to foster the development of the skills and capacities necessary to participate in the minerals sector; promote cross-training and education to improve the resiliency of local communities to fluctuations in mineral activity by emphasizing the development of skills that are transferable beyond the mineral sector;

(d) To facilitate innovative approaches to harnessing the benefits of mineral production by, for example, assessing the full range of potential benefit streams to local economies in addition to mineral revenues, examining the opportunities for leveraging mining projects to increase social investment, and promoting links between mineral projects and regional development priorities at all stages of the mineral production cycle, from exploration through development and production to closure and reclamation;

(e) To foster the development of the technical and managerial capacities of regulatory agencies in developing and transition economies by promoting cooperation between industry, government and local communities, developing common methods of evaluating the impact of mineral development, and strengthening the role of international agreements on social and environmental performance;

(f) To develop policy approaches to address the specific concerns of the small-scale mining sector by, for example, clarifying the rights, title and access of small-scale miners to mineral deposits, and by developing programmes to enhance the technical and organizational capacity of the small-scale mining sector;

(g) To support participatory approaches to the development of local capacity through the promotion of programmes that facilitate consultation and dialogue between mineral project stakeholders from the outset, encouraging central government support for decentralized, bottom-up initiatives to improve capacity, and the development of common frameworks for evaluating and assessing the socio-economic and environmental impacts of mineral operations in terms of their contribution to sustainable development.

Notes

[1] See, for example, North (1955) and Tiebout (1956).

[2] See Hirschman (1977) and Auty (1993).

[3] See, for example, Auty (1993), Gelb (1988), Sachs and Warner (1995) and the analysis by Innis (1956) of the "staples trap" for natural resource economies in Canada.

[4] Mineral economies can often exhibit what Freudenburg and Gramling (1994) term "overadaption", specialization in extractive employment that makes it difficult to consider alternative forms of enterprise and that can deter alternative forms of capital investment.

[5] See, for example, Freudenburg's (1992) analysis of extractive communities and his conclusion that extraction can lead to economic addiction.

[6] It must be recognized, however, that asset depletion can be very significant at the subnational level, particularly for individual communities based on a single mine.

[7] Such volatility derives in part from the capital-intensive nature of the production function for mining, which reduces the flexibility with which firms can respond to price swings. Its impact on revenue streams is illustrated by reference to the increase in the average export price for copper in Chile from 56c/lb in 1986 to $1.05/lb in 1988, which had the effect of doubling the profit of the Corporación Nacional del Cobre

de Chile to $267 million in 1986-1987 and increasing it to $1 billion by 1988 (Financial Times, 1988, cited in Auty, 1993).

[8] "Dutch disease" results from the strengthening of the exchange rate as a consequence of the over-rapid inflow of mineral revenues into the domestic economy. In some cases, such as Mexico, Venezuela and Nigeria during the 1979-1981 oil boom, virtually no non-mining activity remained internationally competitive (Auty, 1993). Analysis has shown that the effect of Dutch disease in weakening the non-mining sector is exacerbated by the fact that the compensating expansion of the non-mining tradeables sector during downturns in mineral prices is hesitant at best (Auty, 1993; Krugman, 1987).

[9] For example, in response to the debt crisis (US$7 billion in 1995) and pressure from international lending organizations, the Government of Zambia embarked on a liberalization programme following the first multi-party elections in 1991. The primary objective of liberalization has been to stimulate economic growth by promoting a stable and open investment environment. The package of reforms has included the privatization of Zambia Consolidated Copper Mines.

[10] Corporación Minera de Bolivia (COMIBOL) is the company in charge of managing Bolivia's interest in all state-owned mining concessions, metallurgical and industrial plants. According to the new mining code, COMIBOL cannot directly operate any mining, metallurgical or industrial operation. COMIBOL will look after the state's interest in those operations only through joint venture, lease and/or service agreements with private entities. The Vinto smelter is the fourth largest tin smelter in the world, and its capitalization is estimated to attract investment of US$ 50-100 million (see United States Department of Commerce, National Trade Data Bank, September 1997).

[11] Privatization of mineral assets worldwide (excluding the former centrally planned countries) raised over $2.2 billion in 1995, twice that of 1994. Bolivia, for example, began privatization of state industrial assets in 1985, Venezuela initiated privatization in 1994, India opened up 13 minerals industries to private investment in 1993, and following an unsuccessful attempt in 1992, Peru renewed its efforts to privatize CENTROMIN in 1995 (Warhurst and Bridge, 1997).

[12] For example, in 1995, foreign direct investment in developing countries was valued at $90,000 million, while capital expenditures on mining alone were estimated at $20,000 million for the period 1995-2000 (Mining Journal, 1996b).

[13] These projects include Lihir, Porgera, Misima, Tolokuma and Ok Tedi. Mining and petroleum represent 72 per cent of the country's export earnings, and account directly for 25 per cent of its gross domestic product (Mining Journal, 1996a).

[14] Based on Hemingway (1991).

[15] See, for example, Laitos (1991) in connection with environmental conditions attached to oil and gas leases.

[16] It is important to note that although foreign direct investment has increased in the minerals sector, its destination is limited geographically to a relatively small number of countries, and furthermore to particular firms within those countries.

[17] Based on Cooney (1996).

[18] South Africa, however, has traditionally had a very different ownership structure with an estimated 90 per cent of mineral rights belonging to private landowners; that structure is currently under review (see case study).

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